UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,622	01/31/2002	Jyri Sintonen	NC25900	2427

30973 7590 03/20/2006

SCHEEF & STONE, L.L.P.
5956 SHERRY LANE
SUITE 1400
DALLAS, TX 75225

EXAMINER	
TORRES, JUAN A	

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/062,622	SINTONEN, JYRI	
	Examiner	Art Unit	
	Juan A. Torres	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-13 and 15-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-13 and 15-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 9-11, 1-8 and 12-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama (US 6314144) in view of Takahashi (US 20020183028 A1).

As per claim 9 Moriyama discloses amplifying the received signal at an amplification level to form an amplified signal (figure 1 block 32 column 2 line 52 to column 3 line 14; figure 3 block 2 column 6 lines 7-67); converting the amplified signal to a digital signal (figure 1 block 11-2; figure 3 block 11-2 column 6 line 19-25); digitally filtering the digital signal at a first interference attenuation factor (figure 3 block 12-3 column 2 lines 26-37 and column 6 lines 37-48); adjusting the amplification level at which of the received signal is amplified based on the first digital filter output (figure 3 block 19 column 6 lines 44-48); and digitally filtering the digital signal at a second interference attenuation factor (figure 3 block 12-2 column 6 lines 54-58). Moriyama doesn't specifically disclose that the first filter output is proportional to the magnitude of the interference signal when the interference signal is greater in magnitude than the

target signal; and that the difference between the maximum possible digital signal and the amplified signal is decreased when the interference signal is greater than the target signal and thereby to cause the amplification level to be proportional to the magnitude of the interference signal. Takahashi discloses measuring the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal (figure 6 block 111;paragraphs [0044]-[0045]); and that the difference between the maximum possible digital signal and the amplified signal is decreased when the interference signal is greater than the target signal and thereby to cause the amplification level to be proportional to the magnitude of the interference signal (figures 8A and 8B; paragraphs [0050]-[0056]). Moriyama and Takahashi are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the gain control disclosed by Takahashi with the receiver disclosed by Moriyama. The suggestion/motivation for doing so would have been to perform AGC accurately and to prevent deterioration of reception quality (Takahashi abstract).

As per claim 10 Moriyama also discloses digitally filtering the digital signal at the first interference attenuation factor such that the first filter output is proportional to the magnitude of the target signal when the target signal is greater in magnitude than the interference signal (figure 26 column 3 line 60 to column 4 line 6).

As per claim 11 Moriyama also discloses that the second interference attention factor is greater than the first interference attenuation factor (figure 3 blocks 12-2 and 12-3 column 3 lines 1-4).

Claims 1, 2, 4-5, 7, 8, 12-13, 15-16 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama (US 6314144) in view of Takahashi (US 20020183028 A1), and further in view of Menkhoff (US 6822692 B2).

As per claim 1 Moriyama discloses an amplifier coupled with the received signal such that the amplifier outputs an amplified signal, the amplification level of the amplifier being set by an amplifier control signal (figure 1 block 32 column 2 line 52 to column 3 line 14; figure 3 block 2 column 6 lines 7-67); an analog-to-digital converter coupled with the amplified signal, the analog-to-digital converter outputting a digital signal where the digital signal is a digital representation of the amplified signal (figure 1 block 11-2; figure 3 block 11-2 column 6 line 19-25); a first digital filter having a first filter input coupled with the digital signal, the first digital filter filters the digital signal at a first interference attenuation factor to produce a first filter output, the first filter output comprising the amplifier control signal (figure 3 block 12-3 column 2 lines 26-37 and column 6 lines 37-48; figure 3 block 19 column 6 lines 44-48); and a second digital filter having a second filter input coupled with the first filter, the second digital filter at a second interference attenuation factor (figure 3 block 12-2 column 6 lines 54-58). Moriyama doesn't specifically disclose that the first filter output is proportional to the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal; that the amplification level to be proportional to the magnitude of the interference signal; and that the first and second filters are in series. Takahashi discloses measuring the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal (figure 6 block 111;paragraphs [0044]-[0045]); and that

the amplification level to be proportional to the magnitude of the interference signal (figures 8A and 8B; paragraphs [0050]-[0056]). Moriyama and Takahashi are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the gain control disclosed by Takahashi with the receiver disclosed by Moriyama. The suggestion/motivation for doing so would have been to perform AGC accurately and to prevent deterioration of reception quality (Takahashi abstract). Menkhoff discloses equivalent structures of digital filter connected in series and in parallel (figures 5 and 6 inputs 7 output 9 column 6 lines 28-53). Moriyama and Menkhoff are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the parallel structures of digital filters disclosed by Menkhoff with the receiver disclosed by Moriyama. The suggestion/motivation for doing so would have been to reduce the cost and complexity of the second digital filter, taking advantage of the already filtered signal from the first digital filter.

As per claim 2 Moriyama, Takahashi and Menkhoff disclose claim 1. Moriyama also discloses the first digital filter and the second digital filter are low-pass digital filters (figure 3 blocks 12-2 and 12-3 are after block 10-2 LPF and they operate in baseband signals, so they are LPF column 6 lines 18-21).

As per claim 4 Moriyama, Takahashi and Menkhoff disclose claim 1. Moriyama also discloses that the amplification level of the amplifier is algebraically related to the amplifier control signal (figure 3 blocks 19 column 7 lines 40-49).

As per claim 5 Moriyama, Takahashi and Menkhoff disclose claim 1. Moriyama also discloses that the amplification level of the amplifier is linearly proportional to the amplifier control signal (figure 3 block 19 column 7 lines 40-49).

As per claim 7 Moriyama, Takahashi and Menkhoff claim 1. Moriyama also discloses that the first filter output is proportional to the magnitude of the target signal when the target signal is greater in magnitude than the interference signal (figure 26 column 3 line 60 to column 4 line 6).

As per claim 8 Moriyama, Takahashi and Menkhoff disclose claim 1. Moriyama also discloses that the second attention factor is greater than the first attenuation factor (figure 3 blocks 12-2 and 12-3 column 3 lines 1-4).

As per claim 12 Moriyama discloses an amplification module for amplifying the received signal at an amplification level to form an amplified signal (figure 1 block 32 column 2 line 52 to column 3 line 14; figure 3 block 2 column 6 lines 7-67); a conversion module for converting the amplified signal to a digital signal (figure 1 block 11-2; figure 3 block 11-2 column 6 line 19-25); a first filtering module for digitally filtering the digital signal at a first interference attenuation factor to produce a first filter output (figure 3 block 12-3 column 2 lines 26-37 and column 6 lines 37-48); an adjusting module for adjusting the amplification level of the received signal based on the first filter output (figure 3 block 19 column 6 lines 44-48); and a second filtering module for digitally filtering the digital signal at a second interference attenuation factor (figure 3 block 12-2 column 6 lines 54-58). Moriyama doesn't specifically disclose that the first filter output is proportional to the magnitude of the interference signal when the interference signal

is greater in magnitude than the target signal; and that the difference between the maximum possible digital signal and the amplified signal is decreased when the interference signal is greater than the target signal and thereby to cause the amplification level to be proportional to the magnitude of the interference signal; and that the first and second filters are in series. Takahashi discloses measuring the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal (figure 6 block 111;paragraphs [0044]-[0045]); and that the difference between the maximum possible digital signal and the amplified signal is decreased when the interference signal is greater than the target signal and thereby to cause the amplification level to be proportional to the magnitude of the interference signal (figures 8A and 8B; paragraphs [0050]-[0056]). Moriyama and Takahashi are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the gain control disclosed by Takahashi with the receiver disclosed by Moriyama. The suggestion/motivation for doing so would have been to perform AGC accurately and to prevent deterioration of reception quality (Takahashi abstract). Menkhoff discloses equivalent structures of digital filter connected in series and in parallel (figures 5 and 6 inputs 7 output 9 column 6 lines 28-53). Moriyama and Menkhoff are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the parallel structures of digital filters disclosed by Menkhoff with the receiver disclosed by Moriyama. The suggestion/motivation for doing so would have

been to reduce the cost and complexity of the second digital filter, taking advantage of the already filtered signal from the first digital filter.

As per claim 13 Moriyama, Takahashi and Menkhoff disclose claim 12. Moriyama also discloses that the first filtering module and the second filtering module are low pass digital filters (figure 3 blocks 12-2 and 12-3 are after block 10-2 LPF and they operate in baseband signals, so they are LPF column 6 lines 18-21).

As per claim 15 Moriyama, Takahashi and Menkhoff disclose claim 12. Moriyama also discloses that the amplification level of the amplifier is algebraically related to the amplifier control signal (figure 3 blocks 19 column 7 lines 40-49).

As per claim 16 Moriyama, Takahashi and Menkhoff disclose claim 12. Moriyama also discloses that the amplification level of the amplifier is linearly proportional to the amplifier control signal (figure 3 block 19 column 7 lines 40-49).

As per claim 19 Moriyama, Takahashi and Menkhoff disclose claim 12. Moriyama also discloses that the second interference attention factor is greater than the first interference attenuation factor (figure 3 blocks 12-2 and 12-3 column 3 lines 1-4).

As per claim 20 Moriyama, Takahashi and Menkhoff disclose claim 12. Moriyama also discloses that the first filter output is proportional to the magnitude of the target signal when the target signal is greater in magnitude than the interference signal (figure 26 column 3 line 60 to column 4 line 6).

Claims 6, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama, Takahashi and Menkhoff as applied to claims 1 and 12, and further in view of Linder (US 5990815 A).

As per claim 6 Moriyama, Takahashi and Menkhoff disclose claim 1. Moriyama and Menkhoff don't disclose that the analog-to-digital converter is a sigma-delta analog-to-digital converter. Linder discloses an analog-to-digital converter that is a sigma-delta analog-to-digital converter (column 1 lines 15-28). Moriyama, Menkhoff and Linder are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the digital filters disclosed by Moriyama and Menkhoff the sigma delta ADC disclosed by Linder. The suggestion/motivation for doing so would have been to use one of the most popular circuit designs for ADCs (column 1 lines 15-28).

As per claim 17 Moriyama, Takahashi and Menkhoff disclose claim 12. Moriyama and Menkhoff don't disclose that the digital signal provided by the conversion module comprises a binary coded decimal signal. Linder discloses digital signal provided by the conversion module comprises a binary coded decimal signal (figure 1 block 26 inside of block 10 column 5 lines 8-25).

As per claim 18 Moriyama, Takahashi, Menkhoff and Linder disclose claim 17. Linder also discloses an analog-to-digital converter that is a sigma-delta analog-to-digital converter (column 1 lines 15-28). Moriyama, Menkhoff and Linder are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the digital filters disclosed by Moriyama and Menkhoff the sigma delta ADC disclosed by Linder. The suggestion/motivation for doing so would have been to use one of the most popular circuit designs for ADCs (column 1 lines 15-28).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres
03-15-2006